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January 15, 2008

Mr. Kurt Stochlia, P.E.  
Vice President  
ICC Evaluation Service, Inc.  
5360 Workman Mill Road  
Whittier, CA 90601

**Re: Proposed Revisions to the Acceptance Criteria AC118: Tapping Screw Fasteners**

Dear Mr. Stochlia,

We are writing in response to the Proposed Revisions to the Acceptance Criteria for Tapping Screw Fasteners, Subject AC118-0208-R1. Hilti has requested revisions of corrosion resistance, quality control testing and core hardness requirements for the fasteners. The following is Buildex's response to the proposed changes.

**Corrosion Resistance:** We believe the selection of fasteners for corrosion protection is the design professional's responsibility because the corrosion resistance of an application system depends on the whole system and environment, not just the fasteners. We doubt that making an application claim, "screw fasteners that are not stainless steel shall be limited to dry, interior applications" is proper. Our test results and 40 years of in-field exposure has shown that under certain conditions, martensitic and austenitic stainless steel fasteners have lower corrosion resistance than carbon steel fasteners. We are recommending that AC118 remain as written for corrosion resistance requirements.

**Quality Control Testing:** A clarification is needed for Section 3.1, Table 1 and section 5.3 to make it clear what tests are required for evaluation, and what tests are required for ongoing quality control. We understand that Table 1 is exclusively related to Section 3.1 and lists the tests to be performed for the evaluation of the fasteners. We understand that Section 5.3 refers to the ongoing tests to be performed in accordance with manufacturer Quality Manual and indicates the sampling frequency requirements. If we misunderstood and the tests in Table 1 are required for the ongoing quality control, this would be too much compared to ICC-ES's requirements for other fastener products. It would be even more infeasible if those ongoing quality control tests are required to perform for each lot as stated in Section 5.3. General fastener industry's practice is conducting monthly or quarterly audit tests for ongoing quality control.

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**Core Hardness Requirements:** Buildex is not in agreement with the proposed changes. Hydrogen embrittlement test is required by AC 118, Table 3.1. Core hardness is not only measurable, but crucial in minimizing the potential for hydrogen embrittlement failure of case hardened fasteners. Therefore, check if the core hardness of a fastener meets manufacturer's and industry specifications is necessary.

Should you have any questions regarding our comments, please feel free to contact me.

Sincerely,

A handwritten signature in cursive script that reads "Michael Gong".

Michael Gong, Ph.D.  
Senior Project Engineer

GRABBER CONSTRUCTION PRODUCTS DIVISION  
205 Mason Circle  
Concord, CA 94520

January 21, 2008

To: Kurt Stochlia, VP  
ICC Evaluation Service, Inc  
5360 Workman Mill Road  
Whittier, CA 90601

RECEIVED  
JAN 22 2008  
ICC-ES, Los Angeles

Subject: AC 118, February Hearing, LA, CA.

Dear Mr Stochlia:

Grabber Construction Products Division of John Wagner Associates, Inc , would like to respond to your request for input on the proposed revisions to AC 118, effective date November 1, 2007, at the next ICC-ES hearing scheduled for February 5, 2008. Upon review of AC118, it is found that the following items require addressing for revision or clarification:

1. Required levels of corrosion resistance correlated to service level conditions in conjunction with corrosion resistive coating compatibility with other construction materials and assemblies.
2. Clarification of sample sizes used for testing pertaining to clarification of quality control requirements for manufactures and quality assurance measures for distributors

These points are further discussed in the body of this letter.

AC118 requires coordination with ASTM B633 regarding the following: service conditions, coating type and thickness, and corrosion resistance requirements with corresponding salt spray testing duration. ASTM B633, Appendix X2.4, Service Conditions, identifies service condition type SC1 as "mild indoor fasteners". ASTM B633, Table 1, Zinc Coatings, shows the corresponding coating type and thickness required for this service condition as Fe/Zn 5 = SC1, which has a 5 micron zinc coating thickness. Following this, Section 4.2 Finish, shows that fasteners intended for use in moderate and mild service conditions and having chromate conversion coatings as being classified as TYPE III and Phosphate conversion coatings classified as TYPE IV. Section 7.4, Corrosion Resistance, shows TYPE III coatings as those being able to withstand a salt spray test duration of 12 hours prior to showing signs of corrosion. AC 118 currently refers to screws employed in moderate to mild service conditions as Type II and requires corrosion resistance equivalent to a salt spray test duration of 96 hours, which is wrong and needs to be coordinated with ASTM B633. The AC118 fastener coating types for these uses should be changed to TYPE III for Zinc coatings and TYPE IV for phosphate coatings with minimum 12 hours salt spray rating for indoor applications.

AC118 also requires clarification on coating types and intended uses relating to the compatibility of the coating in conjunction with other materials on the connection assembly and applied finishes, such as gypsum wall board. Regarding "Finish and Appearance," ASTM C954, Section 7.1, ASTM C1002, Section 9.3, and ASTM C1513, Section 9 require that screws be corrosion-resistant treated with a material which will not inhibit adhesion to joint compounds, or plaster, and will not bleed through decorative finishes. The intent is that the corrosion-resistive coating be compatible with constructed assembly. The process of phosphate coating interior fasteners includes oil quenching, and if these fasteners were required to have salt spray ratings of 96 hours, the required additional amount of oil and plating materials could adversely affect their performance for adhesion to joint compounds or plaster.

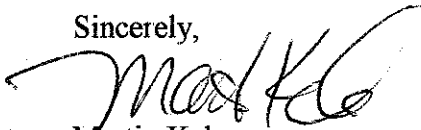
Regarding AC118 TABLE 1 – SAMPLE SIZE FOR TESTS SPECIFIED IN SCREW STANDARDS REFERENCED IN SECTION 3.1 OF THIS CRITERIA, ASTM C954, Section 8.1; ASTM C1002, Section 11; and, ASTM 1513, Section 10, all refer to using 5 screws for a sample size from each lot. Characteristics required by Table 1 are generally done at the factory through their ongoing quality control program. Sample size needs to be changed to 5 screws, and eliminate Table 1. Section 5 should be clarified in that Quality Control is done at the manufacturing facility. Quality Assurance is done by the ICBO/ICC Report holder.

In short, the two main issues are:

- 1) Clarification of service conditions and coordinating coating type and thickness, which ultimately leads to clarification of corrosion test requirements; and
- 2) Testing requirements for quality control measures implemented by the manufacturing facility and the quality assurance program employed by the distributor.

Please contact me if you have any comments or question regarding the above issues. I will be attending the hearing to assist in further refinement of AC118.

Sincerely,



Martin Kehoe  
Grabber Construction Products Division, JWA  
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El Dorado Hills, CA 95762  
Tel: 916-933-0950  
mkehoe@grabberman.com

cc: David Pereg, Staff Engineer, ICC-ES  
Peter Bahlo, Staff Engineer, ICC-ES  
David Calia, CYS Structural Engineers



January 23, 2008

Kurt Stochlia  
Vice President  
ICC Evaluation Services, Inc.  
Los Angeles Business/Regional Office  
5360 Workman Mill Road  
Whittier, California 90601

**Re: February ICC-ES Committee Hearing  
Proposed revisions to AC118**

Dear Kurt,

This letter is in response to the proposals for revisions to ICC-ES AC118 offered by Hilti in at letter to ICC-ES dated December 1, 2007.

With regard to the second part of the first revision proposal in the December 1<sup>st</sup> letter, our recommendation is that substantiation be provided by the proposal proponent regarding the addition of AC118 Section 6.7 that would have “a statement indicating that screw fasteners that are not stainless steel shall be limited to dry, interior applications.” We recommend that this Section 6.7 not be added until substantiation has been provided as it has been our experience that many other coatings perform adequately in corrosive environments.

With regard to the third revision proposal in the December 1<sup>st</sup> letter, Simpson Strong-Tie has specifications for core hardness that our screws must comply with and that core hardness can affect screw performance. In addition, if the core hardness is highly variable, then it is hard to obtain consistent case hardness. Therefore, we recommend that the current language in AC118 Section 2.1.1.3 remain the same.

Please contact me with any questions regarding this subject.

Sincerely,  
Simpson Strong-Tie Co., Inc.

A handwritten signature in black ink that reads "Jeff Ellis".

Jeff Ellis, P.E., S.E.  
Senior Engineering Project Manager



January 23, 2008

AC118-0208-R1

Kurt Stochlia, P.E.  
Vice President  
ICC Evaluation Service  
5360 Workman Mill Road  
Whittier, CA 90601

Dear Mr. Stochlia,

The Steel Stud Manufacturers Association (SSMA) has reviewed the correspondence on changes to Acceptance Criteria AC118. The Steel Stud Manufacturers Association (SSMA) supports item #1 from Mr. Andrew Liechti's letter dated December 1, 2007, which states, in part, that for Sections 3.1.1.2, 3.1.2, 3.1.3.1, 3.1.3.2 and 3.1.4\* [of the Acceptance Criteria 118] "The coating requirement for these sections referring to the IBC and UBC should be modified to either no requirement or should require a 12 hour salt spray rating per ASTM B 117".

SSMA has based this support on the results of the 2005 University of Hawaii Fastener corrosion Study, as well as the International Lead Zinc Research Organization (ILZRO) study being conducted by the National Association of Home Builders (NAHB) Research Center, which we find corresponds to the minimum time required for appearance of red rust in ASTM F1941.

The SSMA understands that the requirements under the 2006 International Residential Code® (IRC) will remain unchanged.

Thank you for your consideration. SSMA will have a representative at the February 5 hearing on this issue; we look forward to a mutually agreeable resolution.

Sincerely,  
STEEL STUD MANUFACTURERS ASSOCIATION

A handwritten signature in black ink that reads "DON ALLEN". The signature is written in a cursive, slightly slanted style. Below the signature, the name "Don Allen, P. E." is printed in a standard font.

Don Allen, P. E.  
Technical Director

\* The Hilti letter stated section 3.1.3.4, which does not exist in the Acceptance Criteria. We believe Mr. Liechti meant section 3.1.4, which does have corrosion resistance requirements.

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